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THE CONSTITUENTS OF THE EUROPEAN FAUNA.

European Animals: their Geological History and Geographical Distribution. By R. F. Scharff. pp. 14 + 158; illustrated. (London: Archibald Constable and Co., Ltd., 1907.) Price 7s. 6d. net.

CHOOSING a suitable and expressive title is not unfrequently one of the most difficult tasks (next to writing a preface) in preparing a work relating to natural history, and in this particular instance we venture to think that the author has not done himself anything like justice in the one he has selected. "Animals" in popular estimation are still regarded (and to a certain extent we think justly so) as forming only one section of the animal kingdom; while, altogether apart from this, the title, "European Animals," which alone appears on the cover, suggests a work of a nature totally different from the one before us. At any rate, such was the impression in our own case, and we expected to find something in the shape of a text-book of at least the mammalian section of the European fauna. When the full title is read the situation is of course changed, although even then there seems something lacking. As a matter of fact, the volume, which is based on a course of (we believe much appreciated) lectures delivered at South Kensington, may be regarded as a sequel to and amplification of the author's previous work on the "History of the European Fauna."

After an introductory chapter, in which general matters affecting zoological distribution and the value of land mammals and molluscs as a basis for zoological geography are discussed, the author, as perhaps in duty bound, commences with Ireland, directing special attention to and attempting to account for the absence in that island of many types common in Great Britain. Scotland, England, and Wales form the subject of the next two chapters, after which the Spanish peninsula, the Alps, eastern Europe and the Caucasus, the western plain of Europe, and, finally, the east and west Mediterranean provinces are discussed in turn. Having expressed his belief in the supreme value of mammals and land-snails to the student of distribution, the author, as might be expected, takes these groups as his text, using other sections of the animal kingdom as collateral evidence whenever occasion may require. A special feature is formed by a series of maps of the geographical distribution of a number of mammals and land-molluscs, these being illustrated by insets displaying a portrait either of the animal itself or of its shell. Assuming these maps to be trustworthy (and such of them as we have examined appear to be so), they have a very considerable value, for few things are more difficult than to obtain accurate information in such matters.

The mention of the insets in these maps naturally leads to a few words with regard to the illustrations generally. Where photographs of shells, like the one of *Clausilia* on p. 95, have been reproduced, nothing

can be better than the result. With regard to most of the other illustrations, we regret, however, that we are unable to congratulate the author. They start with the disadvantage that they are taken from stuffed specimens—a style of illustration which does not appeal to our taste. Added to this is the circumstance that they have been largely "faked" by the addition of false backgrounds. The least unsatisfactory is the frontispiece, representing a group of blue hares and grouse in the Dublin Museum, but even this is blurred and indistinct; while the group of badgers on p. 24, taken from a case in the British Museum, with an added background, is hopelessly bad. Worst of all is the portrait in the inset to the map on p. 78 of an apparently enraged hippopotamus careering on a mountain-top!

Lack of space prevents detailed reference to the views of the author as to the factors which have combined to form the modern fauna of Europe; but this is a matter of less moment since most of these are familiar through his previous work. An especially interesting chapter is the one dealing with the Caucasus and east Europe, in which the view of a former connection between the polar ocean and the Aralo-Caspian system is stoutly maintained; much importance in this respect being attached to the crustaceans of the genus *Pontoporeia*, which are common to the Caspian and the Arctic Ocean. The distinctness of the fauna of the Caucasus from that of south Russia generally (due, it is supposed, to a connection between the Caspian and Black seas) and its affinity to that of Asia Minor is another feature on which special stress is laid.

In conclusion, we may endorse the opinion of Sir E. Ray Lankester, that the lectures (whether or no we accept all the views therein expressed) on which this volume is founded contain so much valuable information that their publication was practically a duty owed by their author to the scientific world. The volume should be in the library of every naturalist.

R. L.

THE GEOGRAPHY OF AUSTRALIA AND NEW ZEALAND.

Stanford's Compendium of Geography and Travel. (New issue.) Australia. Vol. i. Australia and New Zealand. Second edition, re-written. By Prof. J. W. Gregory, F.R.S. Pp. xxiv + 657. (London: E. Stanford, 1907.) Price 15s.

ONE of the characteristics of the age of synthesis in which we live is a desire on the part of the people of Great Britain for a better knowledge of the Britains beyond the seas. Hence spring Imperial conferences and schemes for reciprocal education; hence, also, a crop of volumes dealing with the geography, history, and conditions of the colonies. Among these not one has been written with a deeper insight into the problems which confront a young nation than Prof. Gregory's work on Australia and New Zealand. It is too much the custom for writers to judge the measures of a new country by old-world standards, and to commend or condemn them according to the degree of their correspondence. But a moment's

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reflection will disclose the fallacy of such a criterion. If the problem of colonial administration could be satisfactorily solved by imitating ancestral patterns, what is the reason for the frequent failure of nations which systematically follow this course? why should it be thought necessary to utter warnings against the attempt to import Berlin into Uganda? and how is the success which attends the experimental and empirical methods of Great Britain to be explained?

Readers of NATURE are aware that evolution depends on the power of adaptation to environment, and will have no difficulty in recognising that the secret of the British Empire lies in the plasticity which permits the free play of variation, so as to fit novel functions to new requirements. A perusal of Prof. Gregory's book will disclose numerous experiments in social and industrial legislation which have been made to meet Australian conditions; and his appreciation of many of these departures presents an interesting contrast to the indiscriminating denunciations of most British observers. The volume is a compendium of geography; but the geography of to-day is a much wider subject than the dry-bone catalogues which formerly stood for that science, and which were so repulsive to students of the previous generation. Under the heading of Physical, Economic, and Political Geography, the author has succeeded in presenting a life-like picture of the countries he describes.

Isolation, according to Prof. Gregory, is the explanation of the physical, biological, and political features of Australasia. The strange forms of fauna in Australia are due to its long separation from other continents. The unique aspect of its vegetation is similarly due to development in what is happily called "a biological backwater"; but it is a mistake on that account to regard the flora as primitive in character; it is in reality highly specialised, and the author quotes with approval Spencer Moore's statement that in adaptation of plant life to a dry climate "the Australian flora is without a parallel the world over." It is also a common error to regard the Australian aborigines as archaic. They are closely allied to the hill tribes of Southern India; and here, again, the evidence of specialisation is abundant. The social system of the aborigines is elaborate, and on their own plane they have attained a fair degree of civilisation. Their mental capacity is considerable, and their disposition is described as "kindly, peaceful, and amiable." They are possessed of poetical imagination, and have an intense belief in the immanence of the spiritual world.

Prof. Gregory regards the prevailing aspect of Australian scenery as hopefulness, and this quality is reflected in the temperament of the inhabitants. Although Australians are happy in their dispositions, they are accustomed to make some present sacrifice of comfort for the sake of the future. This has been repeatedly shown by the labour party, to whose efforts advanced temperance legislation is largely due. Although, as a conservative in British politics, Prof. Gregory went to Australia with the "bogey" idea of the Australian Labour Party, he sees much to

admire in their ideals. His observations on the White Australia policy show both sympathy and discernment. He remarks that "no nation has yet become great which left aliens to do its manual labour." Labour in Australia, though high-priced, is cheap because it is so efficient; dividends are paid out of deep quartz mines producing 2 dwts. of gold to the ton, and Australia holds the record of cheap and rapid deep-shaft sinking. The arguments for an Australian navy are fairly stated, as also are those for the Alien Immigration Acts. The chapters on the exploration and discovery of Australia are full of interest, and there is a concise description of Australian federation. Prof. Gregory's volume will well repay perusal, and is a welcome addition to descriptive works on Australasia.

JOHN A. COCKBURN.

AIR CURRENTS AND VENTILATION.

Air Currents and the Laws of Ventilation. By Dr. W. N. Shaw, F.R.S. Pp. xii+94. (Cambridge: University Press, 1907.) Price 3s. net.

THIS book contains the substance of a course of lectures delivered by Dr. Shaw at Cambridge in 1903. The author's reputation as a physicist will naturally lead those who open these pages to expect a scholarly treatment of the subject, and they will not be disappointed; and although we are told in the preface that "this volume is in a sense my last will and testament on the subject of ventilation," we venture, after a careful perusal of the book, to express a hope that Dr. Shaw may find time to extend so judicious and original a treatment of this difficult branch of applied science.

Writers on the subject of ventilation are apt either to deal with individual schemes which have come under their notice, leaving useful general inferences to be constructed by the reader, or, armed with mathematics, to plunge *in medias res* among all the factors of the problem in a manner which entirely obscures the main issue. It is the more satisfactory, therefore, to find a book free from such shortcomings.

While admitting the many and complex problems which deserve consideration, the author of this volume brings us, by a wise process of selection and rejection, to issues which, while admittedly approximate to truth, are at the same time most valuable generalisations, and this with a mathematical restraint which should considerably increase the field in which the utility of his work will be felt.

The leading feature of the book is the development of the subject by the utilisation of an analogy between pneumatic and electrical flow and resistance, originated by Dr. Shaw some years ago. We are shown, for example, the relation of air flow to "head," or "aëromotive force," and how to deal with pneumatic resistances in parallel and multiple arc, and the analogy is even taken so far as the use of null methods in such determinations. In this spirit we are conducted through a network of difficulties in a manner which anyone with the most elementary knowledge of the laws of electricity will much appreciate. This analogy is not confined to mere theorising. Actual